No. 200400032

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Florida Agricultural Experiment Station
University of Florida, IFAS

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'HINSON LONG JUVENILE'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this fourth day of February, in the year two thousand and five.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions* — Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
Florida Agricultural Experiment Station
University of Florida, IFAS

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
F91-2161

3. VARIETY NAME
Hinson Long Juvenile

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
Office of Dean for Research
University of Florida
P.O. Box 110200
Gainesville, Florida 32611-0200

5. TELEPHONE *(include area code)*
352-392-1784

6. FAX *(include area code)*
352-392-4965

FOR OFFICIAL USE ONLY

PVPO NUMBER
200400032

FILING DATE
11/25/2003

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Florida Ag. Exp. Stn. (Public)

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
NA

9. DATE OF INCORPORATION
NA

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Dr. Ann R. Blount
North Florida Research and Education Center
3925 Highway 71
Marianna, Florida 32446

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 3,652.00
DATE 11/25/2003

CERTIFICATION FEE:
$ 432.00
DATE 10/18/04

11. TELEPHONE *(Include area code)*
(850) 482-9849

12. FAX *(Include area code)*
(850) 482-9917

13. E-MAIL
ablount@mail.ifas.ufl.edu

14. CROP KIND *(Common Name)*
Soybean

15. GENUS AND SPECIES NAME OF CROP
Glycine max (L.) Merr.

16. FAMILY NAME *(Botanical)*
Leguminaceae

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☒ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of Variety
d. ☒ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☒ Filing and Examination Fee ($3,652), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(e) of the Plant Variety Protection Act)*
YES *(If "yes", answer items 20 and 21 below)* ☒ NO *(If "no", go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? ☐ YES ☐ NO Dec 4, 2003 BT per applicant's request.
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☐ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☐ YES ☒ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☒ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER	SIGNATURE OF OWNER
NAME *(Please print or type)* Ann R. Blount	NAME *(Please print or type)* Richard L. Jones
CAPACITY OR TITLE Breeder/Asst. Professor	DATE 10/24/03
CAPACITY OR TITLE Dean for Research	DATE 10/24/03

INSTRUCTIONS 200400032

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable *(in the sense that it will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $3,652 ($432 filing fee and $3,220 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

ITEM

18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

19. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

22. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

23. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

21. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

22. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

Seed of Hinson Long Juvenile (F91-2161) has only been grown thru a Material Transfer Agreement (MTA) with FAES obtaining additional information on this cultivar to support research on the long juvenile trait.

23. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089. http://www.ams.usda.gov/lsg/seed.htm

ST-470 (02-10-2003) designed by the Plant Variety Protection Office with Word 2000. Replaces former versions of ST-470, which are obsolete.

Exhibit A

'Hinson Long Juvenile' Soybean

Hinson Long Juvenile, tested experimentally as F91-2161, is a F_6 plant selection from 'Gordon' × F85-1138 (Boerma et al., 1985). F85-1138 is a Maturity Group (MG) VIII long-juvenile selection from a cross between 'Will' (MG III) and an experimental long-juvenile line with the pedigree [('Kirby' × 'Forrest') × PI 159925)] (Bernard and Cremens, 1988; USDA-ARS National Genetic Resources Program, 2002; Hartwig and Epps, 1973). The population derived from a cross of Gordon × F85-1138, made in 1986 by Ann Blount and Kuell Hinson. This cross was advanced to the F_6 (familial) generation by the single pod method (i.e., a variation of the single seed descent method (Brim, 1966) in which a single pod rather than a single seed is harvested per plant). Hinson Long Juvenile soybean was selected within each familial generation for for improved forage and seed yield, and resistance to several diseases affecting the pods and stems. Each familial generation was grown at the North Florida Research and Education Center, Quincy, FL, from 1987 to 1991. Plant row number F91-2421 was selected at Quincy in the F6 generation and breeder's seed was increased at that location in 2000. Breeder's seed was increased at the North Florida Research and Education Center from 1992 through 2000 with annual rouging of off-type variants. Hinson long Juvenile has no known variants or off-types and is considered to be uniform and stable since 1994. Breeder's seed increases are rouged annually (from 1994-2004) at the North Florida Research and Education Center to maintain pure seed (percent Tolerance level less than .01 off-type plants) of this cultivar.

"Exhibit B"

Statement of Distinctness

'Hinson Long Juvenile' Soybean

Hinson Long Juvenile soybean is most like the cultivars Cobb and H7550RR. It is similar to Cobb in that Hinson Long Juvenile soybean and Cobb both have white flowers and gray pod pubescence. Hinson Long Juvenile differs from Cobb in that it has small yellow seed that with a shiny seed coat luster, where Cobb has large white seed with a dull seed coat luster. Hinson Long Juvenile soybean is similar in maturity to H7550RR, however it differs fro H7550RR in that it does not have the gene(s) for resistance to Roundup herbicide (glyphosate) and is white flowered. H7550RR has the gene(s) for Roundup resistance and has purple flowers.

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* (L.) Merr.)

NAME OF APPLICANT(S)
Florida Agricultural Experiment Station

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
North Florida Research and Education Center
3925 Highway 71
Marianna, Florida 32446

FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME
Hinson Long Juvenile

TEMPORARY OR EXPERIMENTAL DESIGNATION
F91-2161

200400032

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in the first box (e.g. [9][9][9] or [0][9]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used:

Please answer all questions for your variety; lack of response may delay progress of your application.

A. MORPHOLOGY

Seed Shape:

[1]

1 = Spherical (L/W, L/T, and T/W ratios < 1.2)
2 = Spherical-Flattened (L/W ratio > 1.2; L/T ratio < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W ratio < 1.2)
4 = Elongate-Flattened (L/T ratio > 1.2;T/W ratio > 1.2)

Seed Coat Color:

[1]

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (*Please Specify*) _____

Seed Coat Luster:

[2]

1 = Dull 2 = Shiny

Seed Size:

[1][4] grams/100 seeds

Hilum Color:

[1]

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black
6 = Black 7 = Other (*Please Specify*) _____

A. MORPHOLOGY (*Continued*)

Cotyledon Color:

[1] 1 = Yellow 2 = Green

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Seed Protein Peroxidase Activity:

[ ] 1 = Low 2 = High

Hypocotyl Color:

[ ] 1 = Green ('Evans' or 'Davis') 2 = Green with Bronze Bands below Cotyledon ('Woodworth' or 'Tracy') 3 = Light Purple below Cotyledons ('Beeson' or 'Pickett 71') 4 = Dark Purple extending to unifoliolate leaves ('Hodgson', 'Coker', or 'Hampton 266A')

Leaf Shape:

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (*Please Specify*) _____

Flower Color:

[1] 1 = White 2 = Purple 3 = White with a Purple Throat

Pod Color:

[1] 1 = Tan 2 = Brown 3 = Black

Pubescence Color:

[1] 1 = Gray 2 = Brown (Tawny) 3 = Light Tawny

Plant Habit:

[1] 1 = Determinate 2 = Semi - Determinate 3 = Indeterminate 4 = Intermediate

Maturity Group:

[1][1]

1 = 000 2 = 00 3 = 0 4 = I 5 = II
6 = III 7 = IV 8 = V 9 = VI 10 = VII
11 = VIII 12 = IX 13 = X 14 = XI 15 = XII

Maturity Subgroup:

[5] Please enter a value from 0 - 9

B. DISEASE REACTIONS 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Tolerant

Bacterial

[3] Bacterial Pustule (*Xanthomonas campestris* pv. *glycines* (Nakano) Dye)

[3] Bacterial Blight (*Pseudomonas syringae* pv. *glycinea* (Coerper) Young, Dye, & Wilkie)

[0] Wildfire Blight (*Pseudomonas syringae* pv. *tabaci* (Wolf & Foster) Young, Dye, & Wilkie)

B. DISEASE REACTIONS (*Continued*) 0 = Not Tested 1 = Susceptible 2 = Resistant 4 = Tolerant 200400032

Fungal

[3] Brown Spot (*Septoria glycines* Hemmi)

Frogeye Leaf Spot (*Cercospora sojina* Hara)

[0] race 1 [0] race 2 [0] race 3 [0] race 4

[0] race 5 [0] race 6 [0] Other (*Please Specify*) _____

[1] Target Spot (*Corynespora cassiicola* (Berk. & Curt.) Wei)

[3] Downey Mildew (*Peronospora trifoliorum* var. *manchurica* (Naum.) Syd. ex Gäum)

[3] Powdery Mildew (*Microsphaera diffusa* Cke. & Pk.)

[3] Brown Stem Rot (*Phialophora gregata* (Allington & Chamberlain) W. Gams.)

[3] Stem Canker (*Diaporthe phaseolorum* (Cke. & Ell.) Sacc. var. *caulivora* Athow & Caldwell)

[3] Pod and Stem Blight (*Diaporthe phaseolorum* (Cke. & Ell.) Sacc. var. *sojae* (Lehman) Wehm.)

[1] Purple Seed Stain (*Cercospora kikuchii* (T. Matsu. & Tomoyasu) Gardener)

[3] Rhizoctonia Root Rot (*Rhizoctonia solani* Kühn)

Phytophthora Root Rot (*Phytophthora megasperma* Drechs. f. sp. *glycinea* (Kuan & Erwin))

[ ] race 1	[ ] race 8	[ ] race 15	[ ] race 22
[ ] race 2	[ ] race 9	[ ] race 16	[ ] race 23
[ ] race 3	[ ] race 10	[ ] race 17	[ ] race 24
[ ] race 4	[ ] race 11	[ ] race 18	[ ] race 25
[ ] race 5	[ ] race 12	[ ] race 19	[ ] race 26
[ ] race 6	[ ] race 13	[ ] race 20	[0] Other (*Please Specify*)
[ ] race 7	[ ] race 14	[ ] race 21	

Field tested as tolerant (3) but not tested to specific races

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

B. DISEASE REACTIONS (*Continued*) 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Tolerant

[1] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

[0] Seed Mottle (Soybean Mosaic Virus)

Nematode

Soybean Cyst Nematode (*Heterodera glycines* Ichinohe)

[0] race 1
[0] race 2
[1] race 3
[0] race 4
[0] race 5
[0] race 6
[1] race 9
[0] race 14
[0] Other (*Please Specify*) _____

[0] Lance Nematode (*Hoplolaimus columbus* Sher)

[3] Southern Root Knot Nematode (*Meloidogyne incognita* (Kofoid & White) Chitwood)

[0] Northern Root Knot Nematode (*Meloidogyne hapla* Chitwood)

[3] Peanut Root Knot Nematode (*Meloidogyne arenaria* (Neal) Chitwood)

[0] Reniform Nematode (*Rotylenchus reniformus* Linwood & Oliveira)

[0] Javanese Nematode (*Meloidogyne javanica* (Treub) Chitwood)

[ ] Other Nematode (*Please Specify*) _____

C. PHYSIOLOGICAL RESPONSES 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Tolerant

[0] Iron Chlorosis on Calcareous Soil

[0] Phosphorus

[ ] Other (*Please Specify*) _____

[0] Boron

[0] Aluminum

[0] Salt

[0] Drought

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D. INSECT REACTIONS 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Tolerant

[0] Mexican Bean Beetle (*Epilachna varivestis* Mulsant)

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[0] Potato Leaf Hopper (*Empoasca fabae* (Harris))

[ ] Other (*Please Specify*) _____

E. HERBICIDE REACTIONS 0 = Not Tested 1 = Susceptible 2 = Resistant

[2] Metribuzin

[0] Bentazone

[0] Sulfonylurea

[0] Glyphosate

[0] Glufosinate

[0] Pendimethalin

[ ] Other (*Please Specify*) _____

F. TRANSGENIC COMPOSITION

Has the development of the subject variety included the insertion of genetic material from an organism other than a soybean, or, the removal of genetic material from the application variety?
If yes, please complete the following information requests*. Use additional pages if necessary. [ ] YES [X] NO

1. Please state the vector's name:
2. Please state the vector components:
3. Please describe the genetic material successfully transferred into the subject variety:
4. Please describe the insertion protocol:

* A literature citation(s) explaining the four information requests above may be an acceptable alternative to completion of the "Transgenic Composition" portion of this form.

G. BIOCHEMICAL MARKERS

Please describe any biochemical information here, which you believe will be helpful in further describing the subject variety (*e.g.* Simple Sequence Repeats, Restriction Fragment Length Polymorphisms, Isozymic Characterization). Use additional pages if necessary.

H. COMMENTS

"Exhibit D"

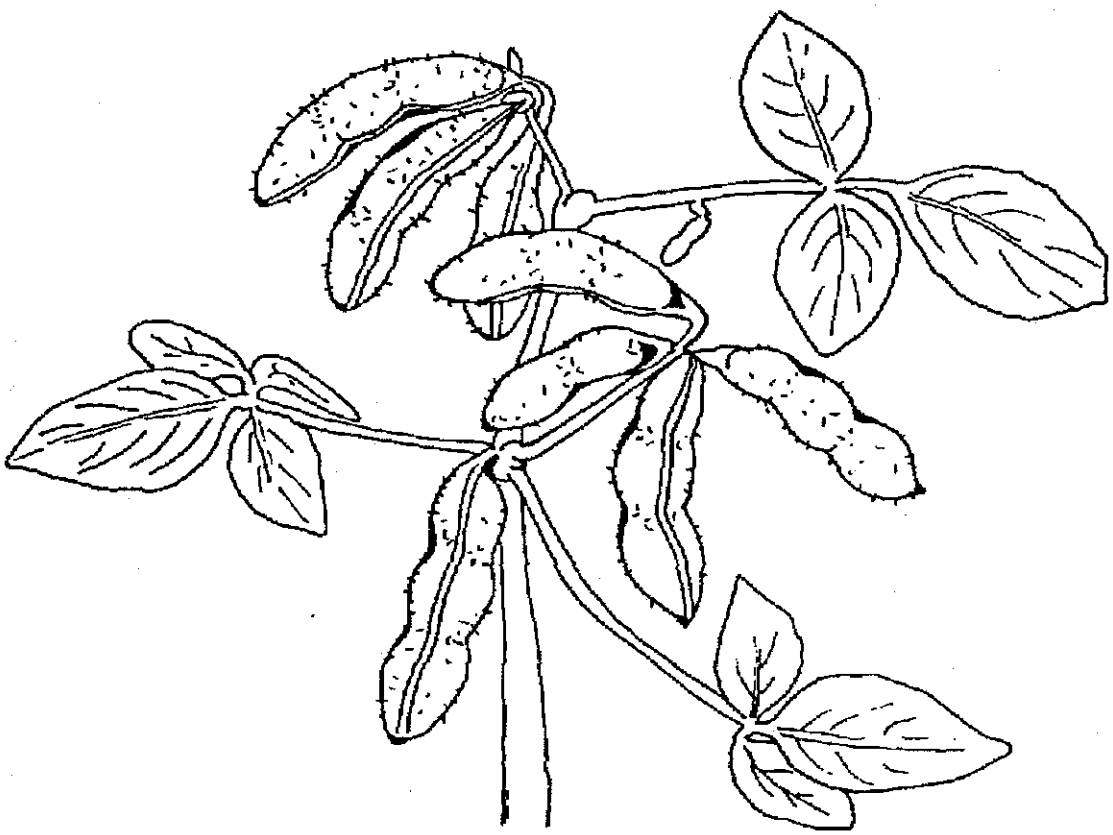
Additional Description of the Variety

'Hinson Long Juvenile' Soybean

Hinson Long Juvenile is best described as a forage soybean because of its unique long-juvenile trait, excellent seed quality, and high forage and seed yield in late plantings (i.e., after 1 July) when compared with cultivars of similar maturity (Blount et al., 2001). Hinson Long Juvenile is well adapted for late plantings where it has superior seed and foliage yield compared with soybean cultivars lacking the long-juvenile trait. Forage yield of Hinson Long Juvenile averaged significantly ($P<0.05$) higher forage dry weight (3844 kg h^{-1}) compared with Cobb (2528 kg h^{-1}) and H7550 RR (2684 kg h^{-1}). It has a determinant growth habit, white flowers, and gray pubescence. Seeds are yellow with buff hila and shiny seed coat luster. Hinson Long Juvenile is moderately resistant to frog-eye leafspot (caused by *Cercospora sojina* K. Hara), southern stem canker [caused by *Diaporthe phaseolorum* (Cooke & Ellis) Sacc. f. sp. *meridionalis* Morgan-Jones], southern root-knot nematode [*Meloidogyne incognita* (Kofoid & White) Chitwood] and peanut root-knot nematode [*M. arenaria* (Neal) Chitwood], and susceptible to races 3 and 9 of soybean cyst nematode (*Heterodera glycines* Ichinohe).

Release of F91-2161 Long Juvenile Soybean, a Soybean for Late Planting, Forage, Hay and Wildlife Purposes and Long-Juvenile Soybean Germplasm F94-2290

A.R. Blount, R.D. Barnett, K.H. Hinson and R.A. Kinloch
North Florida Research and Education Center and the West Florida Research and Education Center



Origin and History

The term "long-juvenile" (LJ) refers to delayed flowering under short-day conditions. The number of days to early bloom in LJ soybeans is similar to conventional types when planted at normal planting time from May-June in southeastern U.S. Genetic analysis by Ray and co-workers suggest that the trait is controlled by a single recessive gene (Ray et al., 1995). The original goal of utilizing this gene in southern soybean variety development was to widen the window for planting. At present, the University of Florida's Extension recommends planting soybeans from May 15 to June 15, and planting often occurs during seasonal drought periods. By developing LJ soybean varieties, the producer would have a longer planting season, conceivably, from April 15 to July 15. The LJ lines that were developed in the program were selected because of superior seed yield, when compared to the seed yield of conventional soybeans in early and late planted situations.

The source of the LJ trait is PI 159925. Dr Edgar Hartwig, USDA-ARS, Stoneville, MS, identified this PI as having a non-conventional response to photoperiod. Dr.Kuell Hinson, USDA-ARS, Gainesville, FL obtained an F2 population of Tracy X (Hill X PI 159925) from Dr. Hartwig, in 1978. Drs. Hinson and Hartwig developed a backcross program to utilized the LJ trait and incorporate it into Forrest (MG V) and Foster (MGVIII). After a number of attempts to develop a widely adapted long-juvenile soybean variety, the Florida Agricultural Experiment Station and the U.S. Regional Soybean Laboratory at Stoneville, Mississippi released the variety 'Padre' in 1988.

LJ lines, including Padre, performed well at 25^0 latitude and below, but matured too late above 25^0. For use in the southeastern U.S., the trait needed to be incorporated into earlier maturing genotypes. The long-juvenile trait permits plants to have a more uniform length life cycle over a wide range of planting dates. Cultivars with the LJ trait are expected to have a competitive yield advantage when planted earlier or later than normal, primarily because they make more near optimum vegetative growth. The ability to produce high yields at planting dates from early April through mid July greatly increases the management flexibility of producers. Also, early-planted soybeans tend to produce higher seed yields. Dr. Hinson continued with crossing and selection with the LJ material and eventually developed breeding lines that ranged from MG VI-VIII. Efforts to incorporate frogeye leafspot, root-knot nematode and soybean cyst nematode resistances were undertaken. Field screenings of LJ lines for resistance to the nematodes were conducted at WFREC, Jay and at the University of GA, Tifton from 1985-2000. A number of advanced LJ lines have been tested regionally in GA, AL, TX, MS and FL.

Early Long Juvenile Soybean Evaluation and Results

Since the objective was to develop soybean varieties that could be planted outside of the normal planting window, seed quality became a concern. LJ lines would often mature slightly earlier or later in the fall and this could subject maturing seed to diseases, particularly, Phomopsis. PI 417479 (MG IV) was used extensively as a parent to improve seed quality and contribute earliness. PI 417479 also contributed resistances to frogeye leafspot and Soybean Mosaic Virus (SMV). A number of LJ lines were developed utilizing PI 417479 to produce early maturing genotypes. These elite lines were selected for their wide adaptation over a number of environments. Soybean researchers involved in the multi-state testing of the long juvenile soybeans included John Sij (TX), David Weaver (AL), Emerson Shipe (SC), and Michael Schmidt (IL).

Regional testing of the LJ lines in Georgia, Alabama and Florida has been done over a number of years. Often, the results of the trials have prevented the release of a LJ variety because of their seed yield in comparison with many commercially available varieties. Seed yields from regional testing of the LJ lines, planted during the normal recommended planting dates, are generally fair to good. Advanced LJ lines were selected for their seed yield when planted in, either, very early (April) or late (July). Late-planted regional trials are usually sown in late June, which is at the end of our recommended planting window. Because of this, regional trials have not adequately assessed the yields of the LJ lines had they been planted under Florida late-season conditions in July. This has caused us to abandon several attempts at variety releases of long-juvenile soybeans.

Several elite lines, regionally tested over the past several years, had good agronomic traits and pest resistance. The lines showed excellent disease resistance and superior late season growth. They also fit well in rotation following small grains and corn in the southeast. F91-2161 was increased at Florida Foundation Seed Producers in 1999 and 2000 and will be considered for release in 2001. Elite line F94-2290 will also be considered for release as LJ soybean germplasm. Breeder's seed of F94-2290 was grown in 2000, but suffered from drought and excessive soil temperatures above 120^0 F. The seed increase was lost and a new increase of F94-2290 has been planted in 2001.

Consideration of F91-2161 as a variety and F94-2290 as germplasm:

A series of LJ crosses were made in Gainesville in 1986. F1 plants were grown in a USDA-ARS winter nursery in Puerto Rico. F2 seed were planted at Gainesville in June 1987. F3 through F6 plant rows were grown in April plantings at Gainesville in 1988 through 1991. Rigorous selection for plant type, seed quality, and apparent high yield was made each generation cycle. The crosses produced progeny with a wide range of seed maturity. In 1991, a number of F6 selections, containing the LJ phenotype, were made and designated with FL experimental numbers. Purification of these F6 selections continued in the soybean breeding effort at NFREC-Quincy in 1993 and 1994. The parentages the two elite LJ lines are as follows:

F91-2161 is a Mat. VIII, F6 selection from 1991 Cross no. 27, and has the parentage: Gordon X F85-1138. F85-1138 is a MG V long-juvenile selection from a cross between Will (MG III) and a long-juvenile line, with primarily Kirby and Forrest germplasm. The long-juvenile trait originally came from PI 159925. This line has performed well when early planted in TX and when late planted in FL. It is moderately resistant to M. incognita.

F94-2290 is a Mat. VIII, F9 selection made in 1994 from LJ line F91-2421. It was grown in purification in a plant row in 1995. F91-2421 was denoted as 1991 cross no. 8, and had the parentage: PI 417479 X F87-4039. PI 417479 is a PI noted for its resistance to Phomopsis seed decay. F87-4039 was an advanced Forrest by long-juvenile selection, which was used extensively in later crossing. F91-2421 was a MG VIII long-juvenile line with excellent seed quality and better plant type, was advanced and considered several times for a variety release. But, F91-2421was small seeded and did not compete well for seed yield in regional testing when planted during the conventional planting season. F91-2421 was eventually abandoned for variety release. F94-2290 has excellent seed quality. It has performed well in early planting in FL, SC, and LA and when late planted in FL and LA. It is moderately resistant to M. incognita and is Phomopsis resistant.

The view within the soybean breeding efforts at Florida was that, even though the LJ trait would be very desirable in situations of late-planting soybeans, any line considered for variety release must yield respectively when compared with seed yields of popular conventional soybeans. It was a concern that it would be difficult to try and justify a poor LJ seed producer on the commercial seed market, regardless of its late-season yielding ability.

Reselections from F91-2421 had shown significant progress in seed yield improvement over the original bulk. Similarly, F94-2290 was a high yielding, F9 selection out of F91-2421. This line out-yielded the original bulk population, and had combined disease and nematode resistance that made it desirable for potential variety release. Regional trial results for F91-2161 and F94-2290, and conventional check varieties are reported in Tables 1-9. In general, these LJ lines have good agronomic characteristics, superior seed quality, and have seed yields comparable to many popular varieties. Both lines yield particularly well in late-planted situations.

For consideration as a summer annual forage crop or as an acceptable oilseed crop, nematode reaction is important. Field screening of these LJ lines at Jay, FL have indicated that these LJ lines have "field resistance" or are "moderated field resistant" to the root-knot nematode complex. Greenhouse evaluation and confirmation of the level of nematode resistance is reported in Table 10 where LJ lines were directly inoculated with known pure cultures of nematode species and plant reactions were rated in comparison to know soybean variety checks. Nematode reactions from the greenhouse screen indicates that LJ F91-2161 has good resistance to southern root-knot nematode and is moderately susceptible to peanut and javanese root-knot and soybean cyst nematode. F91-2290 is considered to be moderately resistant to southern and javanese root-knot and moderately susceptible to peanut root-knot and susceptible to the soybean cyst nematode. A newly released forage soybean, "Tyrone" (USDA-ARS, T. Devine) was included in the 2000 greenhouse trial and was rated as susceptible to all root-knot and cyst nematodes used in that study.

In 1998, the soybean program at University of Florida explored a forage use for the long-juvenile trait in soybeans. One consideration was its use as a late summer hay, haylage or silage crop. Working with John Woodruff, Extension Specialist at Univ. of Georgia, we conducted a late-planted field study with several elite LJ soybean lines at Tifton (summer 1998). He compared the heights and yields of LJ soybean with Cobb, a standard VIII maturity soybean. The biomass produced from LJ lines out-yielded Cobb. A comparison of plant size and rate of development from flowering through the reproductive growth stages, or R stages (described by Fehr and Caviness, 1977), for the LJ lines and Cobb are reported in Table 11. All LJ lines appeared to have a much taller growth habit and longer reproductive stages than the Cobb check. F91-2161 was 43 cm taller than the Cobb check at beginning seed maturity (R7). F94-2119 and F94-2290 were 27 and 22 cm taller than Cobb, respectively.

Concurrent with the study of the forage potential of the LJ soybean at Tifton, a two-year (1998-1999) forage trial was initiated at Quincy, FL (Tables 12 and 13). The study was designed to compare four LJ lines (F91-2161, F94-1604, F94-2119 and F94-2290) with Cobb and another popular Roundup Ready soybean variety (H7550RR), when planted following corn. Four planting dates were used in each year: 1998: 7-17, 8-4, 8-18, 9-15 and in 1999: 7-17, 8-4, 8-20, 9-7. Harvests of the soybean forage was done on the same date for all varieties and LJ lines, although differences in seed development were great and may have biased harvested tonnage. LJ lines were still at beginning pod (R3) while Varieties Cobb and H7550RR were already at beginning seed (R5). Forage yields of the LJ lines would have been considerably greater in both years had harvesting been done at R3 for each individual line or variety, rather than over a range of maturities between R3 and R5 on one specific date. Forage yield and quality was measured in both years. Yields of the LJ lines in 1998 were suppressed due to severe grazing by deer, which

were preferentially grazing only the LJ lines. Steps were taken to control the deer from grazing, but damage on several replications of the LJ lines was severe and adjustments in yield losses had to be estimated. Visual ratings of damage to the plots indicated deer preference to the thin stems, viney-growth habit and leafiness of the LJ lines, over the earlier maturing Cobb and H7550RR. The LJ lines, in both years, out-yielded Cobb and H7550RR and were taller, however, their IVOMD and CP values were lower. This was due to the juvenile nature of the LJ lines since they were in an earlier stage of seed development than the conventional soybeans. The late season juvenile nature of the LJ soybean's growth habit makes it desirable as wildlife forage. Unpublished data (Blount and Francis, 2000) from field studies at a Florida State Wildlife Preserve in north Florida, suggested that the LJ soybean was a desirable forage attractant for deer and was preferentially grazed. This preference may have negative implications for its success as a food-plot forage, since it might not be able to get established in areas of high deer populations and heavy grazing pressure, unless a large acreage is planted.

In 2000, a forage trial was conducted at Ona, FL at the Range Cattle Research and Education Center comparing the LJ soybeans to forage soybean, Tyrone, and with several older soybean varieties. All LJ lines yielded about 3 tons/A dry matter, with crude protein (CP) ranging from 15 to 18.5% and digestibility (IVOMD) ranging from 59 to 64% (Table 14). CP and IVOMD for stem and pod components of the LJ lines and check varieties are reported in Table 15.

The use of soybeans for their isofavone content has become popular for the nutriceutical industry. Isoflavones, found in soybean, have been used in estrogen replacement therapy supplements for menopausal women. At the Iowa State University's Food Science and Human Nutrition Lab, the isoflavone chemistry of F91-2161 was analyzed. Results of the test are reported in Table 16. F91-2161 has good isoflavone chemistry, is slightly higher in daidzein, and genistein and somewhat lower in glycitein in comparison with check variety Haskell. F91-2161 is much higher in isoflavone concentration compared with any of the vegetable soybean lines tested.

Justification for variety release of F91-2161:

F91-2161 (Mat. VIII) is a late maturity, well-adapted soybean line for the southern Coastal Plain region. It has performed well in conventional yield trials in south Georgia and north Florida. Forage yields have also been acceptable, outperforming conventional soybean varieties in late planting dates in Georgia and Florida. Nematode resistance for the prevalent southern root-knot is good. The line is resistant to frogeye leaf spot and seed quality is excellent. This line is uniform in appearance and maturity. Breeder's seed has been given to the Florida Foundation Seed Producers, Inc. in 1999. Seventy-five bushels of seed are available and a foundation seed increase will be made in 2001.

Justification for germplasm release of F94-2290:

F94-2290 (Mat. VIII) is a late maturity, well-adapted soybean line for the southern Coastal Plain region. It has performed well in conventional seed yield trials in south Georgia and north Florida. It has performed well in early planting in Forida, South Carolina, and Louisiana, and when late planted in Florida and Louisiana. Forage yields have been acceptable in late plantings in Georgia

and Florida. Nematode resistance for the prevalent southern and javanese root-knot is fair to moderate. It is susceptible to soybean cyst nematode. The line is resistant to frogeye leaf spot, seed is resistant to Phomopsis seed decay and seed quality is excellent. This line is uniform in appearance and time of maturity.

Plant Variety Protection (PVP) will be sought and a royalty earning arrangement through an exclusive release of the LJ germplasm will be developed.

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Table 1. Soybean variety performance for 1997 at Quincy, FL, normal planting date.[1]

Brand or originating state	Entry	Yield bu/A	Height	Lodging[2]	Shattering[3]	Maturity
MATURITY GROUP VIII						
Novartis	NK S83-30	56.8	29	1.5	1.0	10-27
Hartz	H 8558	55.9	31	2.0	1.0	10-27
Georgia	Cook	55.0	28	1.8	1.0	10-20
South Carolina	Maxcy	53.3	29	1.5	1.0	10-25
Florida	**F91-2161**	**51.4**	**30**	**3.0**	**1.0**	**11-3**
South Carolina	SC 89-551	51.1	30	2.0	1.0	10-30
Florida	F91-2421	51.1	26	3.0	1.0	10-30
Florida	F92-2127	50.5	31	3.0	1.8	11-3
South Carolina	Perrin	48.8	29	1.5	1.0	10-25
Florida	**F94-2290**	**48.7**	**26**	**2.5**	**1.8**	**10-27**
Florida	F91-2420	48.5	27	3.0	1.5	10-26
Average		45.8	29	1.9	1.4	
LSD (0.05)		8.3	3.2	0.7	0.6	
C.V. (%)		12.9	8.1	27.7	32.9	

[1]Planted 17 June 1997, 4 replications. Field was irrigated twice.
[2]Lodging: 1 = all plants erect to 5 = all plants prostrate.
[3]Shattering: 1 = no shattering to 5 = severe seed loss.

Table 2. Soybean variety performance for 1997 at Quincy, FL, late planting date.[1]

Brand or originating state	Entry	Yield bu/A	Height in	Lodging[2] 1-5	Shattering[3] 1-5	Maturity
MATURITY GROUP VIII						
South Carolina	SC 89-551	36.1	21	1.0	1.0	10-26
Florida	**F94-2290**	**36.0**	**26**	**1.0**	**1.3**	**11-3**
Florida	F91-2421	33.9	27	1.5	1.3	11-3
Florida	F91-2420	33.2	25	1.0	1.0	11-3
Novartis	NK S83-30	32.1	22	1.0	1.0	10-26
Florida	**F91-2161**	**32.1**	**29**	**2.0**	**1.0**	**11-3**
Georgia	Cook	30.0	22	1.0	1.0	10-28
Florida	F92-2127	27.6	30	2.0	1.0	11-3
South Carolina	Maxcy	27.5	18	1.0	1.3	10-26
South Carolina	Perrin	25.1	22	1.0	1.3	10-29
Hartz	H8558	23.0	20	1.0	1.0	10-26
Average		31.2	22.5	1.2	1.1	
LSD (0.05)		7.5	2.4	0.3	0.4	
C.V. (%)		17.2	7.6	16.1	26.2	

[1]Planted 18 July 1997, 4 replications. Field was irrigated twice.
[2]Lodging: 1 = all plants erect to 5 = all plants prostrate.
[3]Shattering: 1 = no shattering to 5 = severe seed loss.

Table 3. Summary of soybean variety performance for Florida in 1997.

	Entry	Normal planting date[1] Yield bu/A	Late planting date[2] Yield bu/A	Average across dates[3] Yield bu/A	Southern root-knot site[4] Galling[6] 0-4	Peanut root-knot site[5] Galling[6] 0-4
MATURITY GROUP VIII						
	Cook	55.0	30.0	42.5	0.6 de	3.1 a-f
	F94-2290	**48.7**	**36.0**	**42.4**	**1.9 ab**	**3.4 a-e**
	F91-2161	**51.4**	**32.1**	**41.8**	**2.5 a**	**3.9 a**
	Maxcy	53.3	27.5	40.4	0.8 c-e	3.8 a
	H8558	55.9	23.0	39.5	0.4 e	3.5 a-d
	Perrin	48.8	25.1	37.0	0.3 e	2.0 h
	Avg.	45.8	31.2	38.5	0.76	3.2
	LSD (0.05)	8.3	7.5			
	C.V. (%)	12.9	17.2			

[1]Planted 17 June 1997. Average of four replications. Conducted by A.R. Soffes Blount and R.D. Barnett.
[2] Planted 18 July 1997. Average of four replications. Conducted by A.R. Soffes Blount and R.D. Barnett.
[3]Average of two planting dates and four replications per planting date
[4]Meloidogyne incognita nursery, planted 13 June 1997. Average of 4 replications. Conducted by R.A. Kinloch and H.A. Peacock.
[5]Meloidogyne arenaria nursery, planted 10 June 1997. Average of 4 replications. Conducted by R A. Kinloch and H.A. Peacock.
[6]Galling: 0=no root galling to 4= 76-100% roots galled.
*Means in the same column not followed by the same letter are significantly different at P=0.05.

Table 4. Preliminary soybean variety performance for 1997 at Quincy, FL, late planting date.[1]

Entry	Yield	Height	Lodging[2]	Shattering[3]	Maturity
MATURITY GROUP VIII					
F91-2161	**36.5**	**29.3**	**2.0**	**1.0**	**11-1**
Cobb	34.2	23.3	1.0	1.0	11-1
Maxcy	27.8	18.0	1.0	1.0	10-27
Average	30.6	21.2	1.2	1.3	
LSD (0.05)	6.3	1.7	0.2	0.8	
C.V. (%)	14.4	5.6	10.7	41.6	

[1]Planted 18 July 1997, four replications. Field was irrigated twice.
[2]Lodging: 1 = all plants erect to 5 = all plants prostrate.
[3]Shattering: 1 = no shattering to 5 = severe seed loss.

Table 5. Summary of preliminary soybean variety performance for Florida in 1997.

Brand or originating state	Entry	Yield -normal planting date[1]	Yield-late planting date[2]	Average yield across dates[3]
		bu/A	bu/A	bu/A
MATURITY GROUP VII				
Southern Elite Genetics	Benning	49.6	25.9	37.8
South Carolina	Hagood	43.7	31.0	37.4
MATURITY GROUP VIII				
Florida	Cobb	51.8	34.2	43.0
Florida	**F91-2161**	**44.6**	**36.5**	**40.6**
South Carolina	Maxcy	51.3	27.8	39.6
Average		47.4	30.6	39.2
LSD (0.05)		7.1	6.3	
C.V. (%)		10.5	14.4	

[1]Planted 17 June 1997. Average of four replications.
[2]Planted 18 July 1997. Average of four replications.
[3]Average of two planting dates and four replications per planting date.

Table 6. Long juvenile soybean breeding line performance for Quincy, FL late planting date in 1996.[1]

Brand or originating state	Entry	Yield	Height	Lodging[2]
		bu/A	----in----	1-5
MATURITY GROUP VII				
SGA	Haskell	14.8	14	1
South Carolina	Hagood	12.3	14	1
SGA	Benning	10.5	12	1
MATURITY GROUP VIII				
Florida	**F91-2161**	**26.2**	**20**	**3**
Florida	Cobb	22.9	20	2
South Carolina	Maxcy	12.5	13	1
Georgia	Cook	11.7	14	1
Average		19.0	17	2
$LSD_{0.05}$		6.0	2.6	0.6
CV (%)		22.3	11	29

[1]Planted 17 July 1996, 4 replications.
[2]Lodging: 1 = all plants erect to 5 = all plants prostrate.

Table 7. Late-planted soybean variety performance on irrigated land at Tifton, GA, 1999.

Entry	Yield bu/A	Maturity date	Plant height	Lodging [2]	Weight of 100 seed	Seed quality [3]	Shattering[4]
Cook	24.3	10/23	19	1.0	16.0	2.0	1.0
F91-2161	**24.0**	**10/27**	**27**	**1.0**	**16.0**	**1.0**	**1.3**
Prichard	21.7	10/24	17	1.0	14.4	2.0	1.0
Au91-13	20.4	10/23	21	1.0	14.4	2.0	1.3
F94-2290	**19.6**	**10/27**	**23**	**1.0**	**8.0**	**2.0**	**1.0**
Hagood	18.8	10/20	16	1.0	16.0	2.0	1.7
Haskell	16.8	10/17	17	1.0	12.0	2.0	1.0
Benning	16.6	10/16	18	1.0	12.0	2.0	1.3
Boggs	15.0	10/15	17	1.0	10.0	2.0	1.0
Maxcy	14.6	10/17	19	1.0	11.2	2.0	1.3
Musen	13.4	10/19	15	1.0	10.8	2.0	1.0
Carver	10.7	10/9	15	1.0	9.6	2.0	1.7
Motte	9.5	10/17	17	1.0	9.2	2.0	1.0
Average	15.5	10/18	18	1.0	12.4	2.1	1.3
LSD at 10%	4.4	03	3	-	-	-	N.S.
Std Err.	1.9	01	1	-	-	-	0.3

1. Yields calculated at 13% moisture.
2. Lodging rating: Rating (all plants erect) to 5 (over 80% of plants down).
3. Seed quality rating: Rated 1 (very good) to 5 (very poor).
4. Shattering rating: Rated 1 (no shattering) to 5 (> 50% pods shattered).
5. CV = 21.1% and df for EMS = 72.

Table 8. Early-planted soybean variety performance under irrigated conditions at Tifton, GA, in 2000.

Variety	Yield bu/A	Maturity date	Plant height in	Lodging[2] rating	Weight of 100 seed gm	Seed quality[3] rating
Prichard	51.8	10/22	36	1.7	14.4	1.3
Benning	51.7	10/07	33	1.0	15.6	2.0
Hagood	44.8	10/15	37	1.3	13.8	1.7
Motte	44.5	10/19	37	1.0	14.5	2.0
Carver	43.9	10/3	27	1.0	13.2	2.0
F94-2290	**23.9**	**10/4**	**29**	**1.0**	**14.5**	**2.0**
Maxcy	39.7	10/17	33	1.0	15.2	2.0
Musen	37.4	10/10	35	1.0	13.6	1.7
Cook	37.0	10/13	31	1.0	16.9	2.0
Kuell	36.5	10/20	35	1.3	17.9	2.0
Haskell	31.0	10/08	31	1.0	15.0	2.0
Tyrone	23.3	10/02	65	3.0	14.5	2.3
Average	42.8	10/11	35	1.2	15.0	1.9
LSD at 10% Level	10.1	03	4	0.4	2.2	N.S.
Std. Err. Of Entry Mean	4.3	01	2	0.2	0.9	0.2

1. Yields calculated at 13% moisture.
2. Lodging rating: Rated 1 (all plants erect) to 5 (over 80% of plants down).
3. Seed quality rating: Rated 1 (very good) to 5 (very poor).

Table 9. Early- planted soybeans variety performance on non-irrigated soil at Quincy, FL, 2000.

Variety	Yield[1] bu/A	Plant height --in--	Lodging[2] rating	Shattering[3]
Benning	39.1	26	1.0	1.0
Haskell	38.0	26	1.5	1.0
Kuell	37.4	28	1.3	1.5
Cook	37.0	28	1.5	1.3
Musen	37.0	25	1.3	1.3
F94-2290	**35.5**	**25**	**1.3**	**2.8**
Maxcy	33.1	27	1.0	1.8
Hagood	32.3	29	1.3	1.8
Carver	25.5	21	1.0	3.0
Motte	25.3	28	1.0	1.3
Tyrone	19.6	40	1.8	3.8
Average	32.0	25	1.2	1.6
LSD at 10% level	5.9	3	N.S.	0.5
Std. Err. Of Entry Mean	2.5	1	0.2	0.2

1. Yield calculated at 13% moisture.
2. Lodging rating: Rated 1 (all plants erect) to 5 (over 80% of plants down).
3. Shattering rating: Rated 1 (very good) to 5 (very poor)

Table 10. Greenhouse ratings for resistance to three species of root-knot nematode and cyst nematode.

Year	Variety	Root-Knot			Cyst Nemotode	
		Southern	Peanut	Javanese	Race 3	Race 9
2000	Tyrone	4.3	4.3	5.0	S	S
1990	**F91-2161**	**2.0**	**4.0**	**4.5**	**S**	**S**
	F94-2290	**3.5**	**4.3**	**3.8**	**S**	**S**
	Hagood	1.3	4.0	4.3	R	S
	Prichard	1.3	5.0	5.0	R	R
	Haskell	1.8	1.3	1.0	S	S

Rating: 1 (few gallings) to 5 (many gallings).

Table 11. LJ soybean height (cm) at Tifton, Georgia compared with Cobb when late planted in July 1998.

Entry	R1	R3	R5	R7
Cobb	38	49	50	50
F91-2161	**61**	**92**	**93**	**93**
F91-2421	52	83	83	87
F94-2119	52	74	82	77
F94-2290	**41**	**62**	**68**	**72**

Table 12. Soybean forage yields, plant height and forage quality at NFREC, Quincy in 1998

Variety	Yield	Plant Height	IVOMD	CP
	-kg H^{-1}-	-cm-	%	%
F94-1604	3893 a	61 a	57 d	14 d
F91-2161	**3797 ab**	**57 ab**	**59 cd**	**15 c**
F94-2119	3734 ab	59 ab	57 d	14 cd
F94-2290	**3437 ab**	**52 b**	**61 bc**	**14 cd**
Cobb	3189 ab	39 c	62 ab	16 b
H7550RR	3140 ab	31 d	64 a	18 a
LSD	725	6.4	2.9	1.2

Table 13. Seasonal soybean forage yields at NFREC, Quincy in 1999.

Variety	Yield (kg H^{-1})	IVOMD %
F94-2290	**5032 a**	**62**
F91-2161	**3890 b (severe deer damage)**	**64**
F94-2119	3485 bc (severe deer damage)	61
F94-1604	3125 c	63
H7550RR	2227 d	68
Cobb	1867 d	65
LSD	18.7	

Table 14. Dry biomass yield, crude protein (CP), and in vitro organic matter digestion (IVOMD) of whole plant long juvenile soybeans, Ona, FL, 2000.

Soybean entry	Dry biomass	CP	IVOMD
	-----T/A----	----------%----------	
F94-2119 LJ	3.1	14.8	59.1
F91-2161 LJ	**2.9**	**17.4**	**62.4**
Benning	2.9	19.3	63.0
Hartz 7375R	2.3	15.8	61.8
Biloxi	3.4	17.0	58.2
F94-2290 LJ	**2.9**	**18.5**	**63.9**
Tyrone	2.5	18.9	60.0
Iron Clay Cowpea	2.4	14.7	56.8

Table 15. Percentage stem and pod component and crude protein (CP) and in vitro organic matter digestion (IVOMD) of each long juvenile soybean component, Ona, 2000.

Soybean Entry	Plant component		CP	IVOMD
	Part	%	%	%
F94-2119 LJ	Stem	65	12.6	53.8
	Pod	35	29.6	71.2
F91-2161 LJ	**Stem**	**65**	**11.3**	**54.9**
	Pod	**35**	**27.8**	**72.4**
Benning	Stem	43	8.1	50.2
	Pod	57	33.0	72.0
Hartz 7375R	Stem	54	8.8	50.1
	Pod	46	26.6	69.4
Biloxi	Stem	65	10.4	55.6
	Pod	36	30.3	67.4
F94-2290 LJ	**Stem**	**58**	**12.9**	**54.2**
	Pod	**42**	**27.9**	**70.1**
Tyrone	Stem	47	8.3	41.9
	Pod	53	31.5	69.2

Percentage stem (stem and leaves) and pod (pod and seed) components were determined from a 10 plant average, on a dry matter basis.

Table 16. Isoflavone concentration of F91-2161 compared with experimental vegetable and standard soybean lines, analyzed at Iowa State University, 1999.

Variety or line	Daidzein (ug gm^{-1})	Genistein (ug gm^{-1})	Glycitein (ug gm^{-1})
Haskell	840	791	282
F91-2161	**844**	**847**	**143**
Late Giant vegetable	537	666	131
77 Vegetable	299	417	142
44 Vegetable	682	740	95

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Florida Agricultural Experiment Station/University of Florida	F91-2161	Hinson Long Juvenile
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*	**5. TELEPHONE** *(Include area code)*	**6. FAX** *(Include area code)*
Dr. Ann R. Blount North Florida Research and Education Center 3925 Highway 71 Marianna, Florida 32446	(850) 482-9904	(850) 482-9917
	7. PVPO NUMBER 20040032	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** ☑ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** ☑ YES ☐ NO

10. Is the applicant the original owner? ☑ YES ☐ NO **If no, please answer one of the following:**

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
☐ YES ☐ NO **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
☐ YES ☐ NO **If no, give name of country**

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.